

# Claims

[c1] A pressure transducer comprising:

- a first contact member having on a surface thereof a primary contact comprising first and second terminations and portions spaced apart in a first direction, the portions defining a continuous electrical path between the first and second terminations;
- a spacing member facing the surface of the first contact member, the spacing member having at least one opening aligned with the spaced-apart portions of the primary contact; and
- a second contact member separated from the first contact member by the spacing member, the second contact member having on a surface thereof a plurality of secondary contacts oriented so as to face and cross multiple spaced-apart portions of the primary contact through the at least one opening in the spacing member;

wherein application of an increasing force urges the first and second contact members toward each other and causes an increasing number of the spaced-apart portions to be contacted by an increasing number of the secondary contacts and thereby alter the electrical path between the first and second terminations.

- [c2] The pressure transducer according to claim 1, wherein the primary contact is formed of an electrically resistive material.
- [c3] The pressure transducer according to claim 1, wherein the secondary contacts are formed of an electrically resistive material.
- [c4] The pressure transducer according to claim 1, wherein the continuous and secondary contacts are formed of electrically resistive materials.
- [c5] The pressure transducer according to claim 1, wherein the secondary contacts are electrically separated from each other on the second contact member.
- [c6] The pressure transducer according to claim 5, wherein the secondary contacts are oriented parallel to each other.
- [c7] The pressure transducer according to claim 6, wherein the secondary contacts are parallel to the first direction.
- [c8] The pressure transducer according to claim 6, wherein the spaced-apart portions of the primary contact are oriented parallel to each other in a direction perpendicular to the first direction.

- [c9] The pressure transducer according to claim 1, wherein the spacing member is formed of a dielectric material.
- [c10] The pressure transducer according to claim 1, wherein the primary contact has a serpentine shape and the spaced-apart portions of the primary contact are physically parallel to each other.
- [c11] The pressure transducer according to claim 1, wherein the at least one opening in the spacing member comprises multiple openings and the plurality of secondary contacts are arranged in multiple sets, each set of the secondary contacts facing the spaced-apart portions of the primary contact through a corresponding one of the multiple openings in the spacing member.
- [c12] The pressure transducer according to claim 1, wherein the pressure transducer is installed in a seat cushion of a passenger vehicle.
- [c13] The pressure transducer according to claim 1, wherein the pressure transducer is a component of a passive occupant detection system installed in a passenger vehicle.
- [c14] A pressure transducer comprising:
  - a first contact member having on a surface thereof a primary contact formed of an electrically resistive material, the primary contact comprising first and second termi-

nations between which current is able to flow through the primary contact, the primary contact further comprising parallel portions spaced apart in a first direction; a spacing member facing the surface of the first contact member, the spacing member having at least one opening aligned with the parallel portions of the primary contact;

a second contact member separated from the first contact member by the spacing member, the second contact member having on a surface thereof a plurality of parallel contacts formed of an electrically resistive material, the parallel contacts being oriented in the first direction and facing the parallel portions of the primary contact through the at least one opening in the spacing member; and

means for flowing current through the primary contact between the first and second terminations thereof; wherein application of an increasing force urges the first and second contact members toward each other and causes an increasing number of the parallel portions of the primary contact to be contacted by an increasing number of the parallel contacts of the secondary contact and thereby alter the current path between the first and second terminations, and wherein the electrical resistance of the current path decreases as the force increases.

- [c15] The pressure transducer according to claim 14, wherein the primary contact has a serpentine shape.
- [c16] The pressure transducer according to claim 14, wherein the spacing member is formed of a dielectric material.
- [c17] The pressure transducer according to claim 14, wherein the at least one opening in the spacing member comprises multiple openings and the plurality of parallel contacts are arranged in multiple sets, each set of the parallel contacts facing the parallel portions of the primary contact through a corresponding one of the multiple openings in the spacing member.
- [c18] The pressure transducer according to claim 14, wherein as the increasing force is applied, contact between the parallel portions of the primary contact and the parallel contacts of the secondary contact starts near the center of the at least one opening and then progresses toward the perimeter of the opening.
- [c19] The pressure transducer according to claim 14, wherein the pressure transducer is installed in a seat cushion of a passenger vehicle.
- [c20] The pressure transducer according to claim 14, wherein the pressure transducer is a component of a passive oc-

cupant detection system installed in a passenger vehicle.